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Walker et al.

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(54) **METHOD AND APPARATUS FOR
MAINTAINING A CUSTOMER DATABASE
USING LICENSE PLATE SCANNING**

(75) Inventors: **Jay S. Walker**, Ridgefield; **Andrew S. Van Luchene**, Norwalk, both of CT (US); **Joshua D. Rogers**, New York, NY (US)

(73) Assignee: **Walker Digital, LLC**, Stamford, CT (US)

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(52) U.S. Cl. **707/5; 707/104; 705/7; 705/15; 705/16; 705/37**

(58) Field of Search **707/1-5, 6, 104; 705/7-11, 14, 26, 37, 15-16, 36; 701/117**

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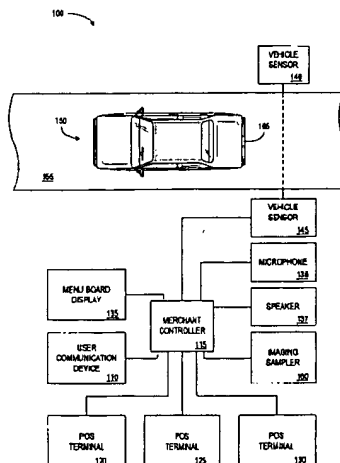
Primary Examiner—Hosain T. Alam

(74) *Attorney, Agent, or Firm*—Dean P. Alderucci

(57) **ABSTRACT**

An apparatus is provided for generating an image of a license plate and determining license plate characters from the image. Then, a database is searched to determine if there is a customer record that corresponds to the license plate characters. If so, the customer record is retrieved and information about the customer is available. Otherwise, a customer record is created. The created customer record corresponds to the license plate characters and stores transaction data that represents a transaction.

76 Claims, 23 Drawing Sheets



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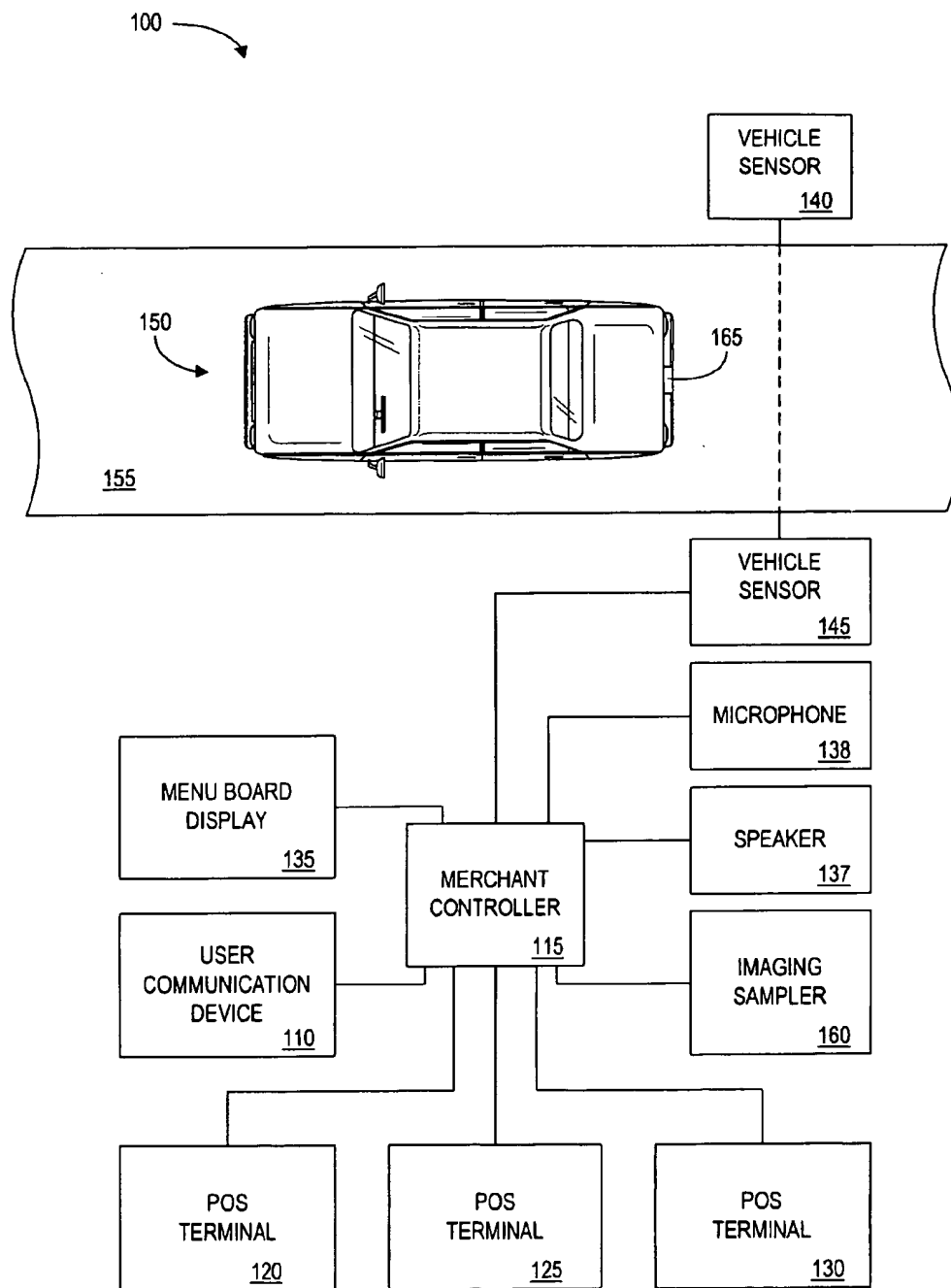


FIG. 1

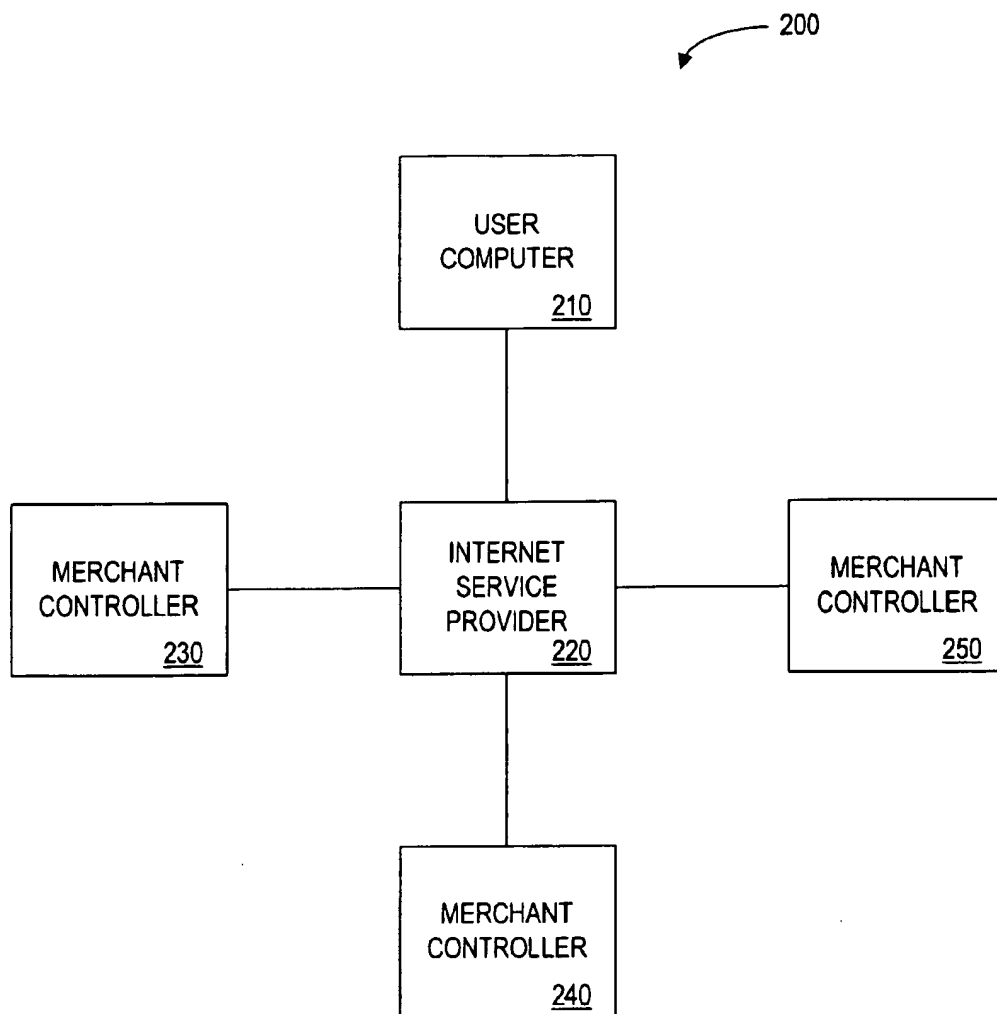


FIG. 2

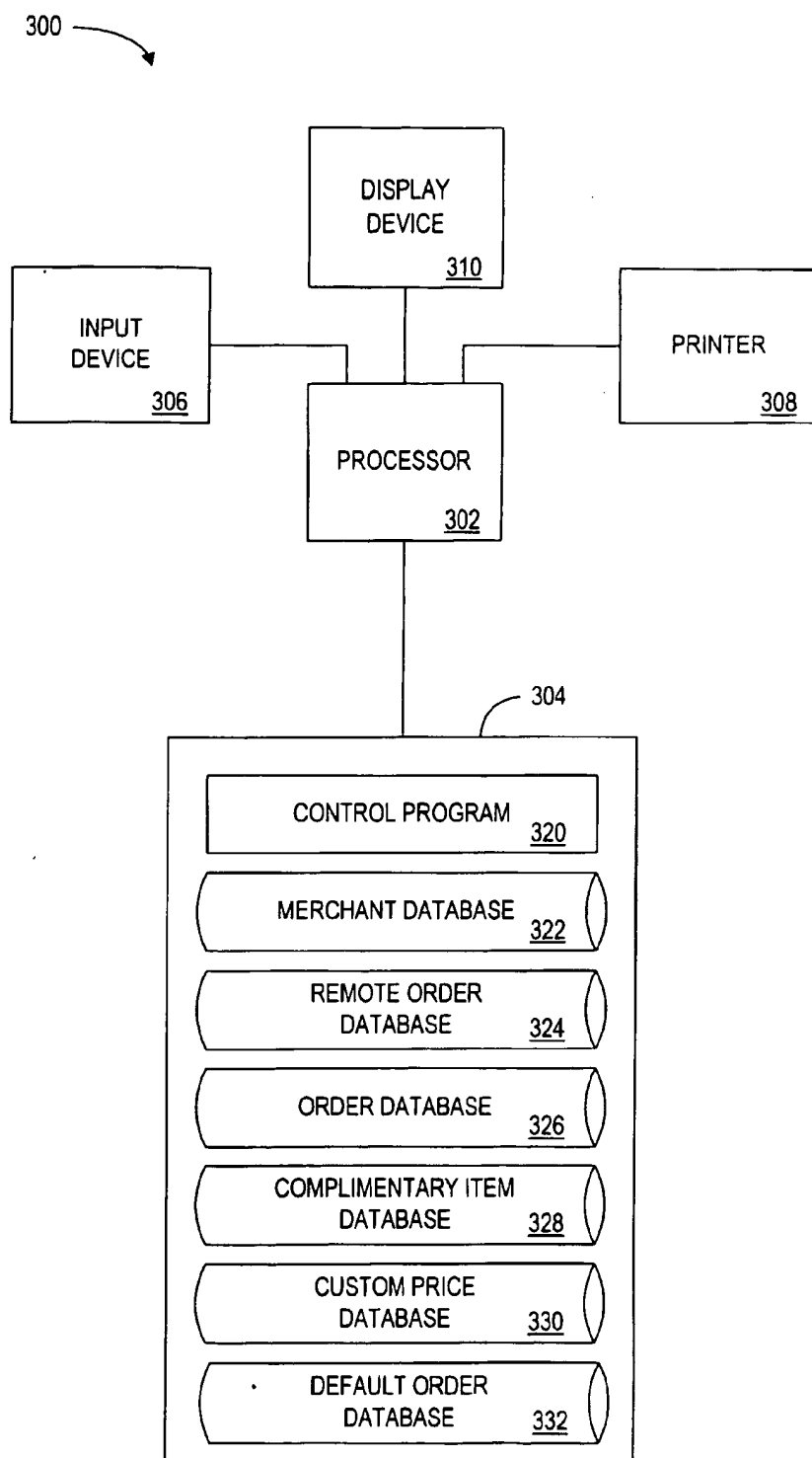


FIG. 3

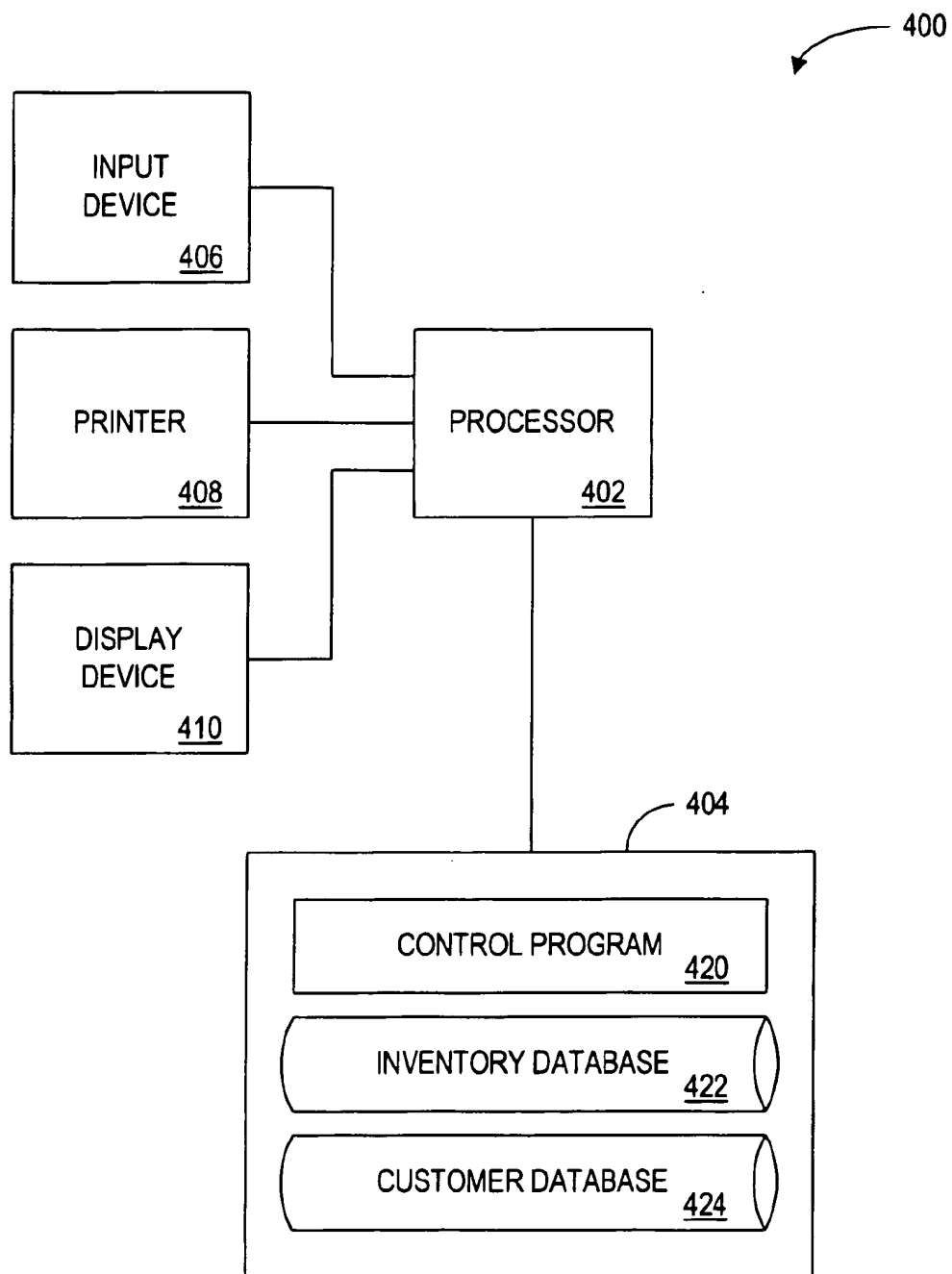


FIG. 4

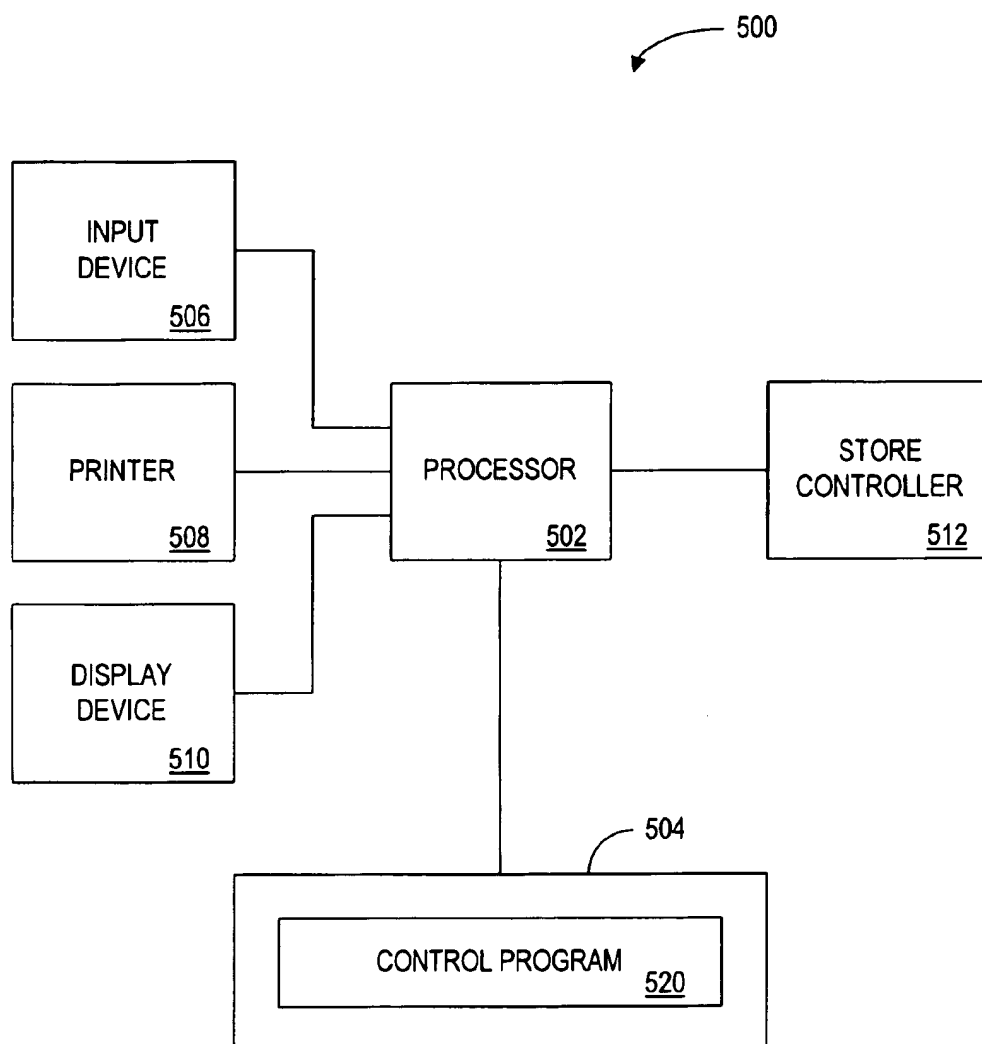


FIG. 5

600

MERCHANT IDENTIFIER 620	NAME 622	ADDRESS 624	SIC CODE 626
M0001	CORP. X	123 MAIN ST. CITY, USA	1111
M0002	STORE Y	8910 RIVER PL. SUBURB, USA	2222
M0003	OUTLET Z	248 STATE HWY. TOWN, USA	3333

602
604
606

FIG. 6

700

LICENSE PLATE ABCDEF/CT				702
DEAN GREEN				704
ADDRESS 5500 MAIN ST CITY, USA				706
CREDIT CARD NUMBER 1111-2222-3333-4444				708
DEFAULT ORDER: 1 HAMBURGER, 1 SMALL COLA				710
TRANSACTION IDENTIFIER 720	MERCHANT IDENTIFIER 722	DATE AND TIME 724	PURCHASE PRICE 726	
12345678901	M0001	3/7/99 10:06 AM	\$12.83	
12345678909	M0002	3/12/99 1:14 PM	\$8.49	

712

714

FIG. 7

800

INVENTORY IDENTIFIER	DESCRIPTION	PRICE
12345678	HAMBURGER	\$0.69
12345679	CHEESEBURGER	\$0.79
12345680	DOUBLE HAMBURGER	\$1.25
12345681	SMALL COLA	\$0.85

802 804 806 808

FIG. 8

900

REMOTE ORDER IDENTIFIER 920	DATE AND TIME ORDERED 922	LICENSE PLATE CHARACTERS 924	ITEMS ORDERED 926	MERCHANT IDENTIFIER 928
123456	1/3/99 11:00 AM	ABCDEF/CT	1 HAMBURGER	M0001
123457	1/3/99 12:03 PM	123ABC/NY	1 SMALL COLA, 1 HAMBURGER	M0002
123458	1/4/99 7:11 PM	123987/NM	1 HAMBURGER, 1 CHEESEBURGER	M0003

902 904 906

FIG. 9

1000

ORDER IDENTIFIER 1020	MERCHANT IDENTIFIER 1022	DATE AND TIME 1024	PURCHASE PRICE 1026	LICENSE PLATE CHARACTERS 1028	ITEMS 1030	OFFERS 1032	OFFER ACCEPTED 1034
12345678901	M0001	3/7/99 10:06 AM	\$2.83	ABCDEF/CT	2 HAMBURGERS, 1 SMALL COLA	SWITCH HAMBURGER FOR CHEESEBURGER	NO
12345678902	M0002	3/7/99 10:31 AM	\$0.69	123456/NY	1 CHEESEBURGER	SMALL COLA SUGGESTIVE SELL	NO
12345678903	M0003	3/7/99 11:00 AM	\$1.00	ABC123/VA	1 SMALL COLA, 1 HAMBURGER	SMALL COLA UPSELL	YES

1002

1004

1006

FIG. 10

1100

CUSTOMER IDENTIFIER 99123				1102
COMPLIMENTARY ITEM	NUMBER REMAINING	DATE LAST RECEIVED	TIME PERIOD	
12345679	17	1/3/99	2 WEEKS	1126

1104

FIG. 11

1200

CUSTOMER IDENTIFIER 99123				1202			
INVENTORY IDENTIFIER	1220	DESCRIPTION	1222	CUSTOM PRICE	1224	RESTRICTIONS	1226
12345678	1204	HAMBURGER		\$0.60		NONE	
12345679	1206	CHEESEBURGER		\$0.65		PURCHASE PRICE > \$5.00	

FIG. 12

1300

CUSTOMER IDENTIFIER 99123		1302
DEFAULT ORDER ITEMS	1320	WHEN ACTIVE
2 HAMBURGERS, 2 SMALL COLAS	1304	1322 WEEKDAYS BETWEEN 12:00 PM AND 4:30 PM
1 HAMBURGER, 1 SMALL COLA	1306	WEEKDAYS AFTER 4:30 PM
2 CHEESEBURGERS, 1 SMALL COLA	1308	WEEKENDS

FIG. 13

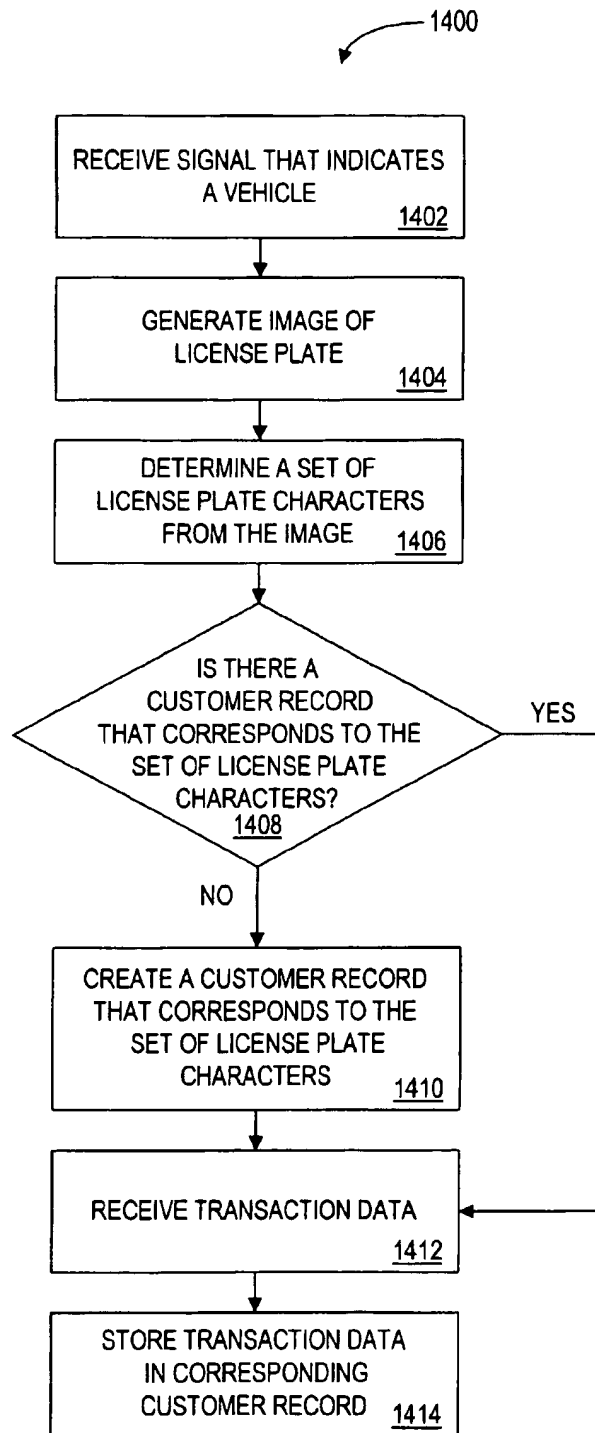


FIG. 14

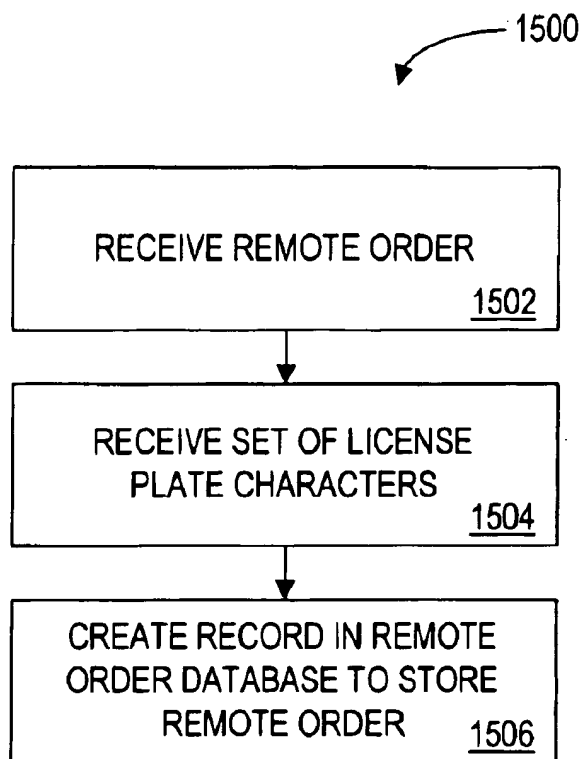


FIG. 15A

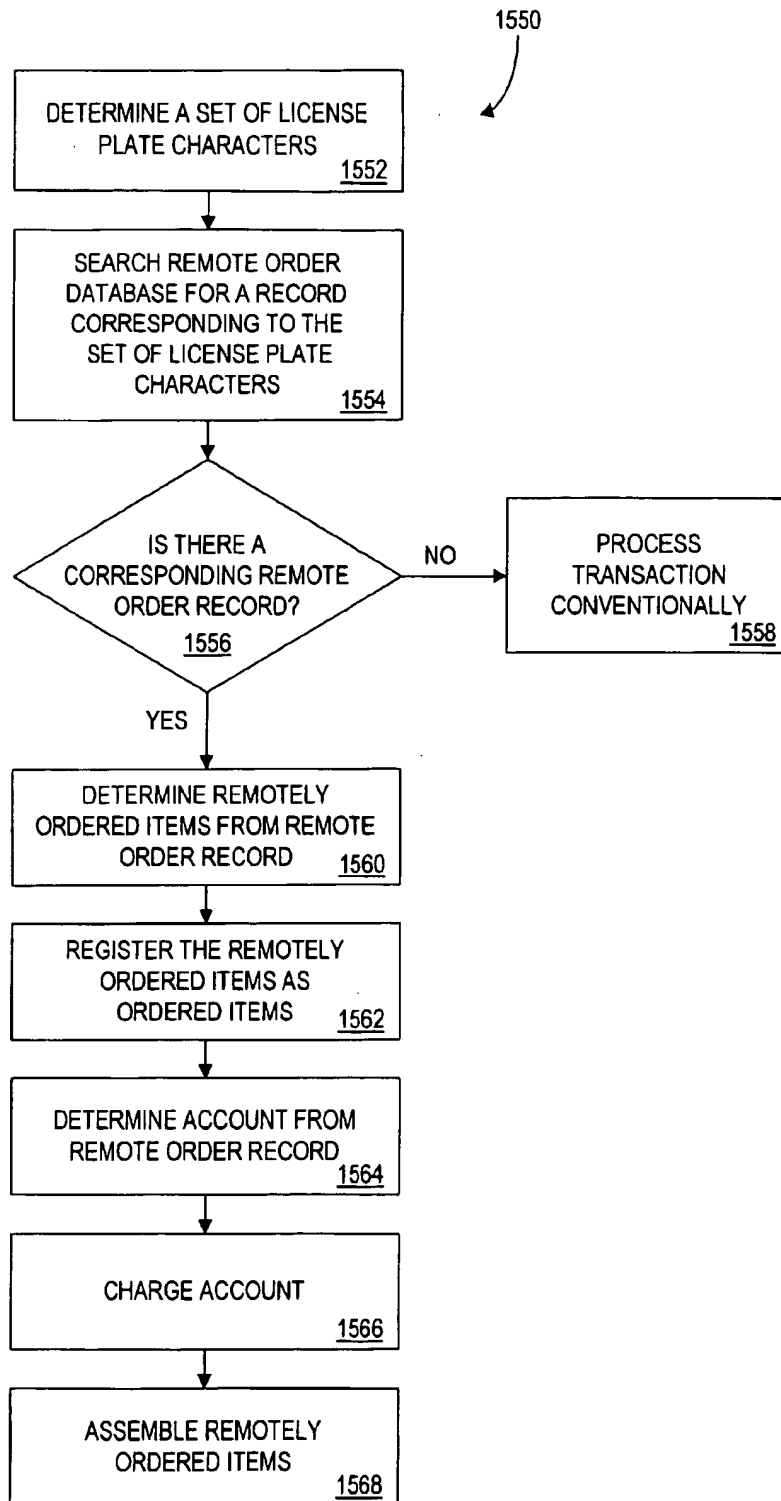


FIG. 15B

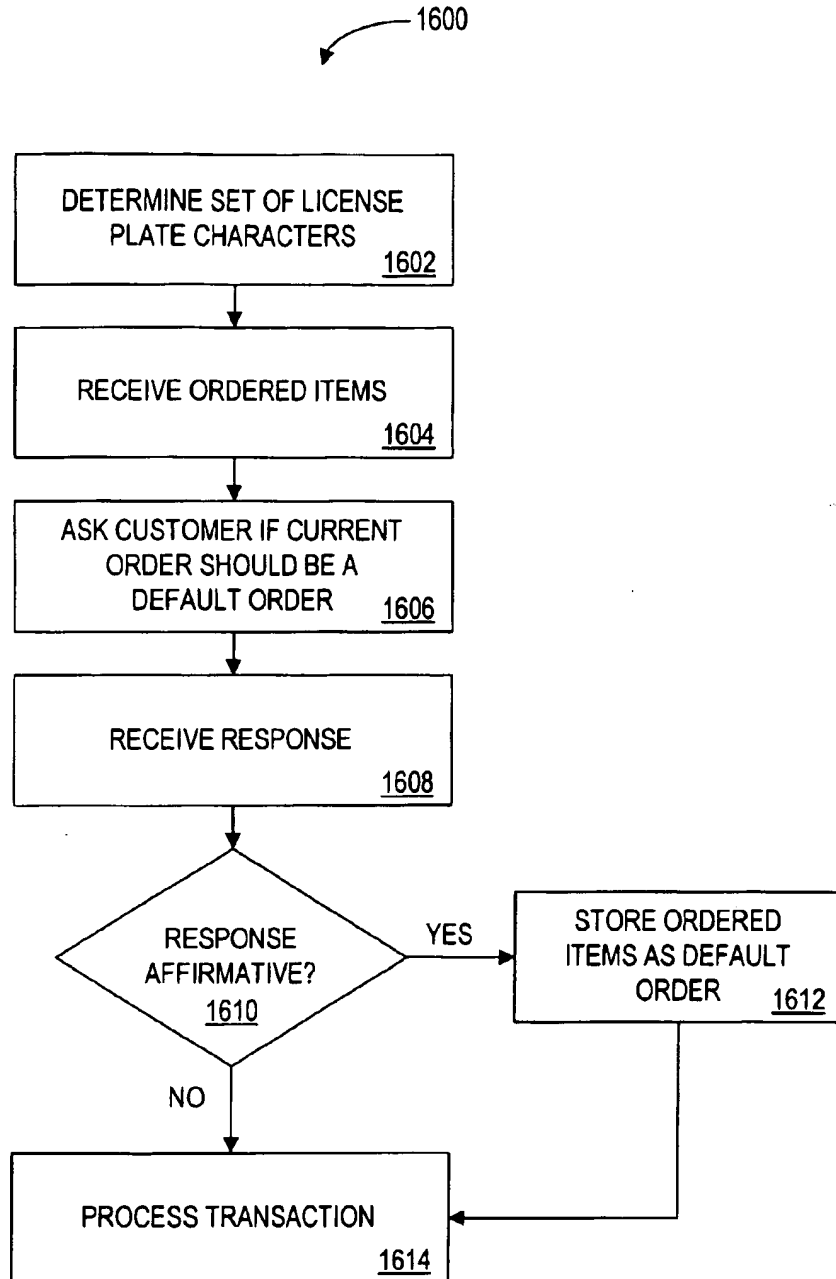


FIG. 16A

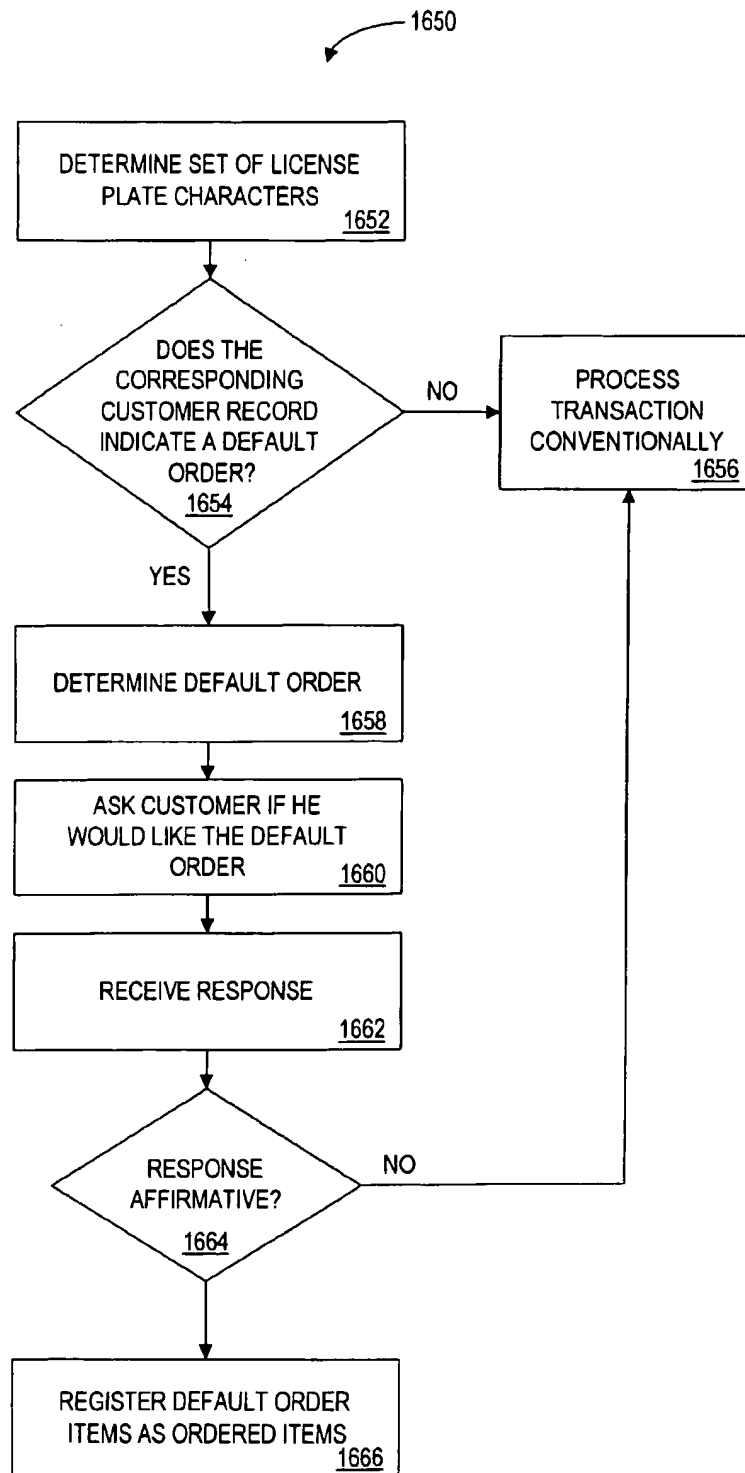


FIG. 16B

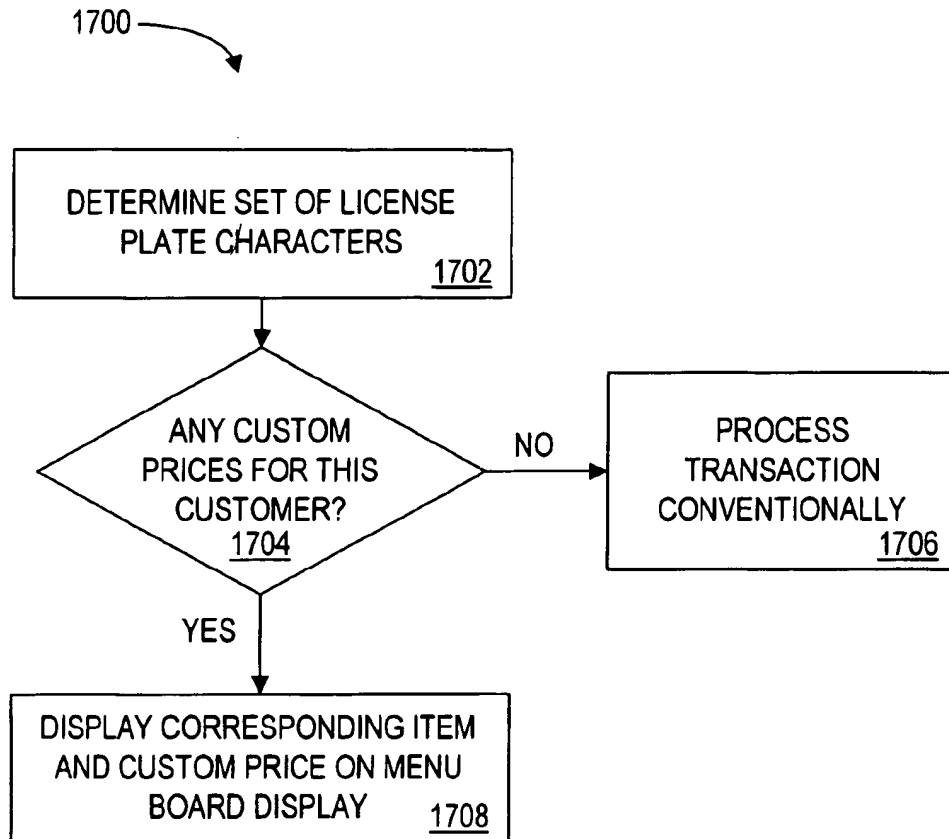


FIG. 17

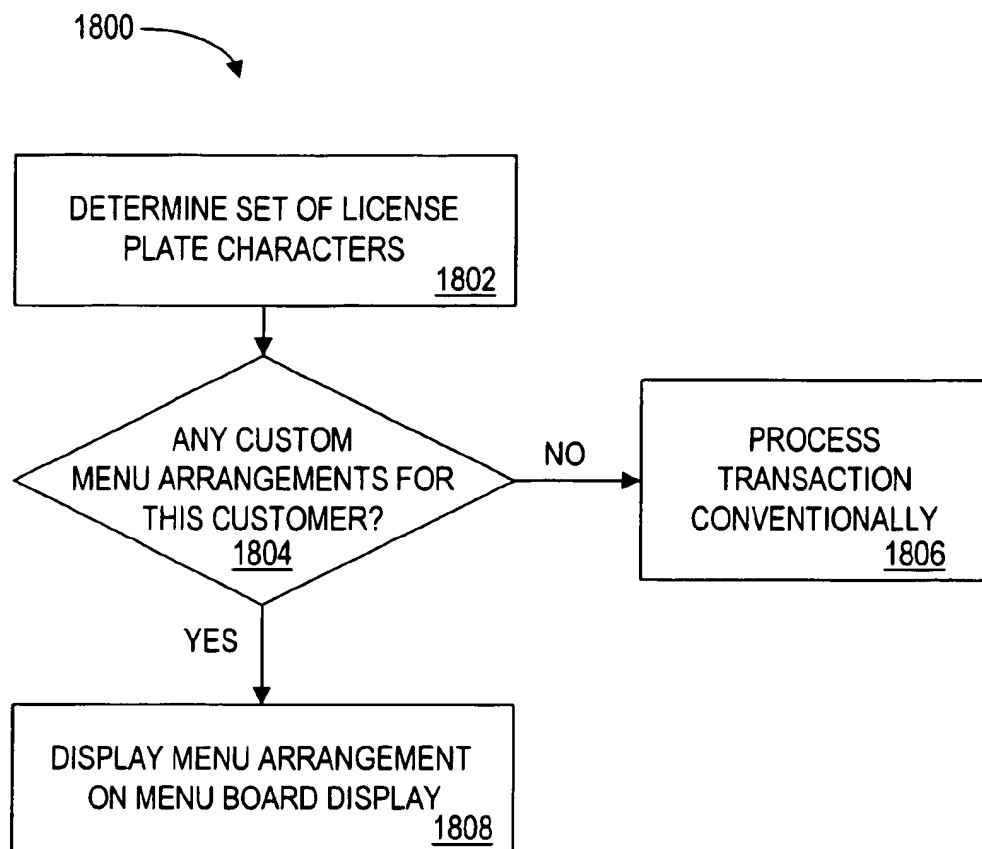


FIG. 18

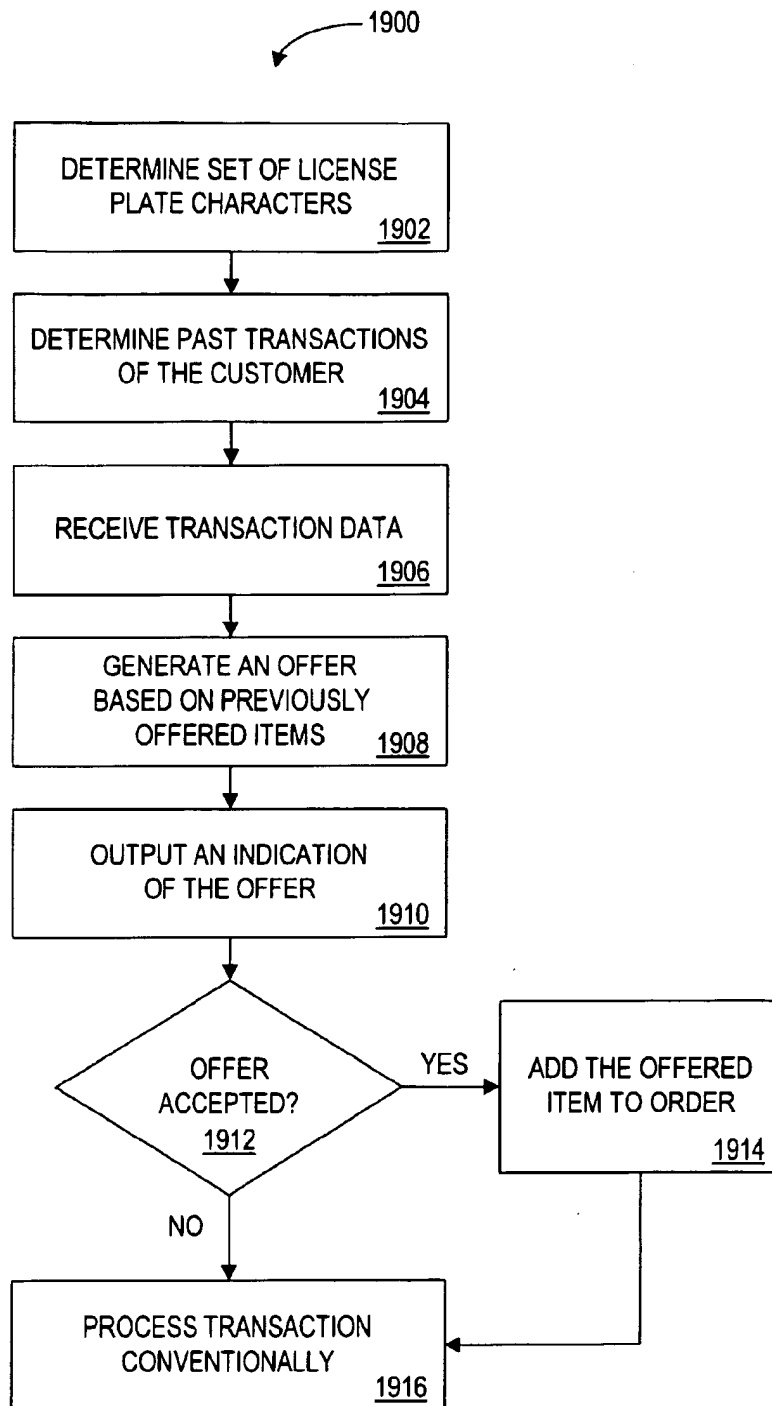


FIG. 19

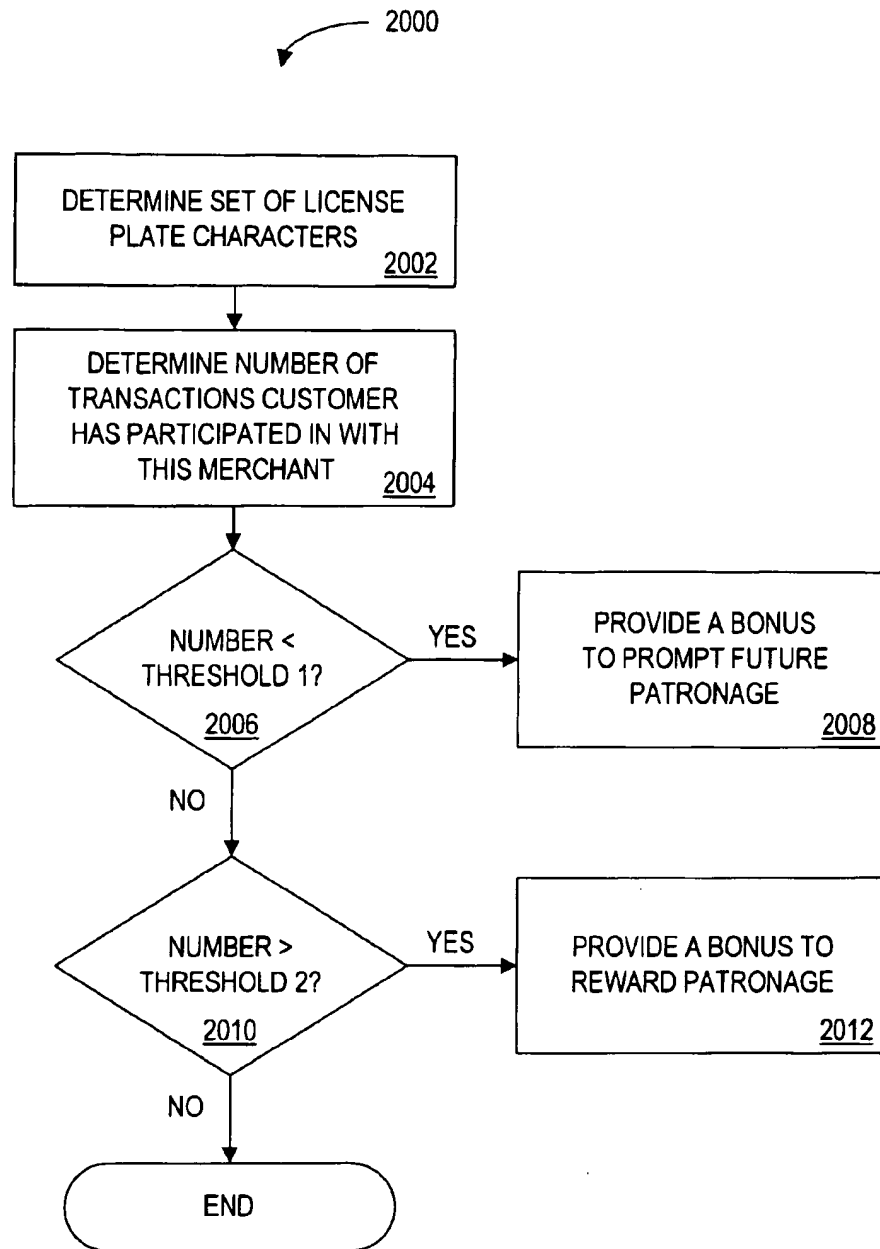


FIG. 20

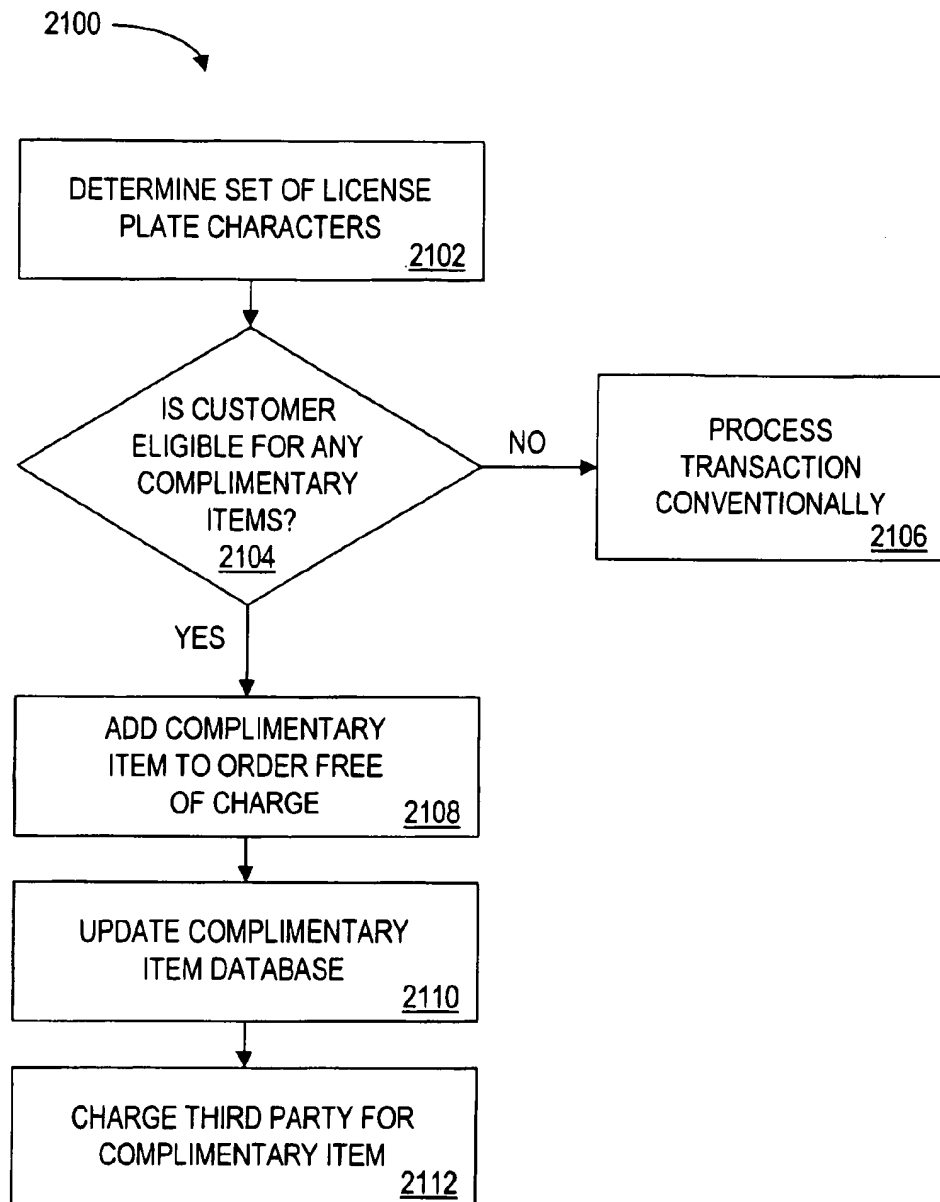


FIG. 21

1

METHOD AND APPARATUS FOR MAINTAINING A CUSTOMER DATABASE USING LICENSE PLATE SCANNING

CROSS REFERENCE TO RELATED APPLICATIONS

This application is related to co-pending U.S. patent application Ser. No. 09/166,367 entitled "METHOD AND APPARATUS FOR PROVIDING A DISCOUNT TO A CUSTOMER THAT PARTICIPATES IN TRANSACTIONS AT A PLURALITY OF MERCHANTS" filed on Oct. 5, 1998 in the name of Jay S. Walker, Andrew S. Van Luchene, Magdalena Mik and Daniel E. Tedesco; and is further related to co-pending U.S. patent application Ser. No. 09/166,405 entitled "METHOD AND APPARATUS FOR DEFINING ROUTING OF CUSTOMERS BETWEEN MERCHANTS" filed on Oct. 5, 1998 in the name of Jay S. Walker, Andrew Van Luchene, Daniel E. Tedesco, Magdalena Mik and James A. Jorasch, each of which is assigned to the assignee of the present application and each of which is incorporated by reference herein as part of the present disclosure.

FIELD OF THE INVENTION

The present invention relates to methods and apparatus for creating and maintaining customer information.

BACKGROUND OF THE INVENTION

Many quick-service restaurants and other businesses have a "drive-through" which allows customers to place an order and also receive the ordered items without exiting their vehicle. A typical drive-through is a roadway equipped with a speaker and microphone to allow a customer in a vehicle to interact with a cashier operating a remote point-of-sale (POS) terminal.

A drive-through allows customers to make purchases more conveniently, and consequently businesses with drive-throughs tend to promote customer satisfaction and customer loyalty.

However, applicants have recognized that drive-through customers may be provided with additional benefits. In particular, drive-through customers may be provided with customized benefits in a manner not addressed by the prior art.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide drive-through customers with customized benefits.

In accordance with the present invention, an apparatus is provided for generating an image of a license plate and determining license plate characters from the image. Then, a database is searched to determine if there is a customer record that corresponds to the license plate characters. If so, the customer record is retrieved and information about the customer is available. Otherwise, a customer record is created. The created customer record corresponds to the license plate characters and stores transaction data that represents a transaction.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic illustration of an apparatus provided in accordance with the present invention.

FIG. 2 is a schematic illustration of another embodiment of the present invention involving a plurality of merchants.

FIG. 3 is a schematic illustration of a merchant controller of the apparatus of FIG. 1.

2

FIG. 4 is a schematic illustration of another embodiment of a merchant controller.

FIG. 5 is a schematic illustration of a POS terminal of the application of FIG. 1.

FIG. 6 is a schematic illustration of an embodiment of a merchant database of the apparatus of FIG. 1.

FIG. 7 is a schematic illustration of a record of an embodiment of a customer database of the apparatus of FIG. 1.

FIG. 8 is a schematic illustration of an embodiment of an inventory database of the apparatus of FIG. 1.

FIG. 9 is a schematic illustration of an embodiment of a remote order database of the apparatus of FIG. 1.

FIG. 10 is a schematic illustration of an embodiment of an order database of the apparatus of FIG. 1.

FIG. 11 is a schematic illustration of a record of an embodiment of a complimentary item database of the apparatus of FIG. 1.

FIG. 12 is a schematic illustration of a record of an embodiment of a custom price database of the apparatus of FIG. 1.

FIG. 13 is a schematic illustration of a record of an embodiment of a default order database of the apparatus of FIG. 1.

FIG. 14 is a flow chart illustrating an embodiment of a method for maintaining a database using license plate scanning.

FIG. 15A is a flow chart illustrating an embodiment of a method for receiving a remote order.

FIG. 15B is a flow chart illustrating an embodiment of a method for further processing a remote order.

FIG. 16A is a flow chart illustrating an embodiment of a method for establishing a default order.

FIG. 16B is a flow chart illustrating an embodiment of a method for processing a default order.

FIG. 17 is a flow chart illustrating an embodiment of a method for displaying custom prices of a customer.

FIG. 18 is a flow chart illustrating an embodiment of a method for displaying custom menu arrangements of a customer.

FIG. 19 is a flow chart illustrating an embodiment of a method for generating an offer for a customer based on past transactions of the customer.

FIG. 20 is a flow chart illustrating an embodiment of a method for providing a bonus to a customer based on his past transactions.

FIG. 21 is a flow chart illustrating an embodiment of a method for awarding complimentary items to a customer.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Heretofore, restaurants and other businesses have not been able to differentiate between drive-through customers, much less customize orders (sets of items to be purchased) for drive-through customers or otherwise benefit from the ability to identify drive-through customers. In particular, in accordance with the present invention a database of customer information may be created in a passive, unobtrusive manner without forcing customers or merchants to depart from their existing practices. Applicants are unaware of any such prior art systems for providing additional benefits to drive-through customers. Since customers may be identified by their license plates, the customers can be provided with

3

customized service in a manner not recognized or described by the prior art. For example, customers at a drive-through may be provided with customized services such as (i) custom item prices, (ii) custom menu arrangements, (iii) the ability to collect remotely-ordered items, (iv) the ability to have default orders processed, (v) customized suggestive sale offers, (vi) benefits for participating in many transactions, (vii) benefits for participating in transactions with great frequency, and (viii) the ability to periodically collect items that are complimentary or prepaid.

Referring to FIG. 1, an apparatus 100 comprises a user communication device in communication with a merchant controller 115. The user communication device 110 may be for example, a computer or a telephone operated by a customer that places a remote order. Accordingly, the user communication device 110 is typically located remotely from the merchant controller 115, and may be located in the customer's home. The merchant controller 115 is a computer or similar control device that directs the operation of various devices of a restaurant or other business, as described in further detail below. The merchant controller 115 is typically but not necessarily located in a store building of the business.

The merchant controller 15 is also in communication with POS terminals 120, 125 and 130. The POS terminals may be, for example, cash registers located in the store building of the business. Although three POS terminals are shown in FIG. 3, any number of POS terminals may be in communication with the merchant controller 115.

A menu board display 135, such as the Digital Menu-Board™ by Siren Technologies of Chicago, Ill, is in communication with the merchant controller 115 and is operable to display items which may be ordered and corresponding prices for the displayed items, as commanded by the merchant controller 115. The menu board display 135 may be positioned to allow drive-through customers to view the menu board display 135 before (or while) ordering in the drive-through. A speaker 137 and a microphone 138 in communication with the merchant controller 115 allow drive-through customers to communicate with store personnel, such as cashiers operating POS terminals, that operate respective speakers and microphones (not shown) for talking to and listening to the drive-through customers in a manner known in the art. The speaker 137 and the microphone 138 need not be in communication with the merchant controller 115, but may instead be solely in communication with the corresponding speaker and microphone of store personnel.

Vehicle sensors 140 and 145 are positioned on opposite sides of a roadway 155 such as a drive-through alley in a fast food restaurant. The vehicle sensors 140 and 145 are adapted to detect the presence and/or the absence of a vehicle 150 located on the roadway 155.

The vehicle sensors 140 and 145 may comprise, for example, pressure sensors located beneath the roadway 155 that detect the weight of the vehicle 150. Alternately, vehicle sensors 140 and 145 may comprise, respectively, a light transmitter and a receiving photo sensor (an optical detector) that cooperate to detect the presence of the vehicle 150 when the transmitted light is blocked by the vehicle 150 and thus is not received by the receiving photo sensor. Other means for detecting the presence and the absence of a vehicle will be understood by those skilled in the art.

The merchant controller 115 is also in communication with an imaging sampler 160, which may comprise a video camera that reads ("samples") an image of a license plate

4

165 attached to the vehicle 150 and generates a corresponding image signal. The image signal may be a digital image. The image sampler 160 may further be operable to focus on the license plate 165 of the vehicle 150. In alternate embodiments, the merchant controller 115 may direct the focusing on the license plate 165. Generated image signals are transmitted to the merchant controller 115, which is operable to store and recognize the characters on the license plate 165, as described below. For a description of prior art systems for generating images of license plates and determining a set of license plate characters from the image, one of ordinary skilled in the art may refer to U.S. Pat. No. 4,878,248 to Shyu et al.; U.S. Pat. No. 4,817,166 to Gonzalez et al.; and U.S. Pat. No. 5,081,685 to Jones, III et al., each incorporated by reference herein as part of the present disclosure. After the license plate characters have been recognized, the image may be retained for future comparison or analysis, if desired.

Referring to FIG. 2, in an alternate embodiment of the present invention there may be a plurality of merchant controllers, each directing the operations of a different merchant.

Furthermore, each merchant controller may be centrally controlled, allowing the merchant controllers to cooperate in a manner described below. A user computer 210 is in communication with an Internet service provider ("ISP") computer 220. The user computer 210 may perform some or all of the functions of the user communication device 110 (FIG. 1). The user computer 210 is typically a personal computer operated by the customer and equipped to access the Internet or other electronic network. The ISP computer 220 is a computer that enables the user computer 210 to access the Internet in a manner known in the art. Accordingly, the ISP computer 220 may be of the type controlled and/or operated by America Online, Prodigy, or Microsoft for offering Internet connectivity and content to users.

The ISP computer 220 is in turn in communication through the Internet with merchant controllers 230, 240 and 250 in a manner known in the art. In another embodiment of the present invention, the user computer 210 may be provided with access to the Internet by another computer besides the ISP computer 220, while the ISP computer 220 may enable the merchant controllers to access the Internet.

As is also known in the art, the merchant controllers 230, 240 and 250 may control "web sites" that may be accessed by the user computer 210 upon entering appropriate commands. Each merchant controller may perform some or all of the functions of the merchant controller 115 (FIG. 1). In particular, each merchant controller may direct the operations of a different store. Although three merchant controllers are shown in FIG. 2, any number of merchant controllers may be in communication with the ISP computer 220 without departing from the spirit and scope of the present invention.

The ISP computer 220 may perform many of the processes described below as performed by a merchant controller, especially those processes that are performed for more than one merchant controller. The ISP computer 220 may also store data that is used by more than one merchant controller. Accordingly, the ISP computer may centrally control the merchant controllers, as described in detail below.

Referring to FIG. 3, reference numeral 300 indicates a more detailed illustration of the merchant controller 115 (FIG. 1) in a single-store embodiment of the present inven-

5

tion. In an embodiment of the present invention involving a plurality of stores, reference numeral 300 indicates a more detailed illustration of the ISP computer 220 (FIG. 2) which may centrally control a plurality of merchant controllers.

A processor 302 that comprises one or more conventional microprocessors such as the Intel® Pentium® microprocessor is in communication with a data storage device 304, such as an appropriate combination of magnetic, optical and/or semiconductor memory. The processor 302 and the storage device 304 may each be (i) located entirely within a single computer or other computing device; (ii) connected to each other by a remote communication medium, such as a serial port cable, telephone line or radio frequency transceiver; or (iii) a combination thereof. For example, reference numeral 300 may represent one or more computers that are connected to a remote computer for maintaining databases.

The processor 302 is also in communication with an input device 306, a printer 308 and a display device 310. The input device 306 may comprise a keypad for transmitting input signals to the processor 302. Other types of input devices are known to those skilled in the art. The printer 308 is for registering indicia on paper or other material. The display device 310 is operative to display at least alphanumeric characters, and thus may be any of a number of known video monitors, liquid crystal displays ("LCD") or light emitting diode ("LED") displays. Many types of input devices and display devices are known to those skilled in the art, and need not be described in detail herein.

The storage device 304 stores a control program 320 for controlling the processor 302. The processor 302 performs instructions of the control program 320 and thereby operates in accordance with the present invention and particularly in accordance with the methods described in detail herein. The control program 320 furthermore includes program elements that may be necessary, such as an operating system and "device drivers" for allowing the processor 302 to interface with computer peripheral devices, such as the input device 306, the printer 308 and the display device 310. Appropriate device drivers and other necessary program elements are known to those skilled in the art and need not be described in detail herein.

The storage device 304 also stores (i) a merchant database 322, (ii) a remote order database 324, (iii) an order database 326, (iv) a complimentary item database 328, (v) a custom price database 330, and (vi) a default order database 332. In addition, other devices (e.g. the merchant controllers) may obtain information from the databases stored by the storage device 304. As will be understood by those skilled in the art, the schematic illustrations and accompanying descriptions of the databases presented herein are exemplary arrangements for stored representations of information. A number of other arrangements may be employed besides the tables shown. Similarly, the illustrated entries represent exemplary information, but those skilled in the art will understand that the number and content of the entries can be different from those illustrated herein.

Referring to FIG. 4, in an embodiment of the present invention involving a plurality of stores, reference numeral 400 indicates a more detailed illustration of a merchant controller. A processor 402 comprises one or more conventional microprocessors such as the Intel® Pentium® microprocessor. The processor 402 is in communication with a data storage device 404, such as an appropriate combination of magnetic, optical and/or semiconductor memory. The processor 402 and the storage device 404 may each be (i) located entirely within a single computer or other computing

6

device; (ii) connected to each other by a remote communication medium, such as a serial port cable, telephone line or radio frequency transceiver; or (iii) a combination thereof. For example, reference numeral 400 may represent one or more computers that are connected to a remote computer for maintaining databases.

The processor 402 is also in communication with an input device 406, a printer 408 and a display device 410. The input device 406 preferably comprises a keypad for transmitting input signals to the processor 402. The printer 408 is for registering indicia on paper or other material. The display device 410 is operative to display at least alphanumeric characters to the customer and/or cashier, and thus may be any of a number of known video monitors, liquid crystal displays ("LCD") or light emitting diode ("LED") displays. Many types of input devices, printers and display devices are known to those skilled in the art, and need not be described in detail herein.

The storage device 404 stores a control program 420 for controlling the processor 402. The processor 402 performs instructions of the control program 420 and thereby operates in accordance with the present invention and particularly in accordance with the methods described in detail herein. The control program 420 furthermore includes program elements that may be necessary, such as an operating system and "device drivers" for allowing the processor 402 to interface with computer peripheral devices. Appropriate device drivers and other necessary program elements are known to those skilled in the art and need not be described in detail herein.

The storage device 404 also stores (i) an inventory database 422, and (ii) a customer database 424. In another embodiment, one or more POS terminals may store one or more of the databases 422 and 424. The databases 422 and 424 are described in detail below and depicted with exemplary entries in the accompanying figures. As will be understood by those skilled in the art, the schematic illustrations and accompanying descriptions of the databases presented herein are exemplary arrangements for stored representations of information. A number of other arrangements may be employed besides the tables shown. Similarly, the illustrated entries represent exemplary information, but those skilled in the art will understand that the number and content of the entries can be different from those illustrated herein.

Referring to FIG. 5, a POS terminal 500 is descriptive of any or all of the POS terminals 120, 125 and 130 (FIG. 1). The POS terminal 500 may be, for example, the NCR 7454 manufactured by NCR Corporation or the IBM 4683 manufactured by International Business Machines. The POS terminal 500 includes a processor 502 that comprises one or more conventional microprocessors such as the Intel® Pentium® microprocessor. The processor 502 is in communication with a data storage device 504, such as an appropriate combination of magnetic, optical and/or semiconductor memory. The processor 502 and the storage device 504 may each be (i) located entirely within a single computer or other computing device; (ii) connected to each other by a remote communication medium, such as a serial port cable, telephone line or radio frequency transceiver; or (iii) a combination thereof. For example, the POS terminal 500 may comprise one or more computers that are connected to a remote computer for maintaining databases.

The processor 502 is also in communication with an input device 506, a printer 508 and a display device 510. The input device 506 may comprise one or more of (i) a keypad for transmitting input signals to the processor 502; (ii) a card

7

reader for reading magnetically-encoded information on cards passed therethrough, such as credit cards, frequent shopper cards and identity cards; (iii) an optical scanner for reading bar codes, such as bar codes registered on items of inventory; and (iv) a touch screen for generating signals that indicate when and where the screen has been touched, pressed or actuated. The printer 508 is for registering indicia on paper or other material, thereby printing receipts, coupons and vouchers as commanded by the processor 502. The display device 510 is operative to display at least alphanumeric characters to the customer and/or cashier, and thus may be any of a number of known video monitors, liquid crystal displays ("LCD") or light emitting diode ("LED") displays. Many types of input devices, printers and display devices are known to those skilled in the art, and need not be described in detail herein.

The storage device 504 stores a control program 520 for controlling the processor 502. The processor 502 performs instructions of the control program 520 and thereby operates in accordance with the present invention and particularly in accordance with the methods described in detail herein. The control program 520 furthermore includes program elements that may be necessary, such as an operating system and "device drivers" for allowing the processor 502 to interface with computer peripheral devices. Appropriate device drivers and other necessary program elements are known to those skilled in the art and need not be described in detail herein.

Referring to FIG. 6, a table 600 illustrates an embodiment of the merchant database 322 (FIG. 3). The table 600 includes entries 602, 604 and 606, each of which describes a merchant that owns, operates or controls a merchant controller. It will be understood by those skilled in the art that the table 600 may include any number of entries. The table 600 also defines fields for each of the entries 602, 604 and 606, which specify (i) a merchant identifier 620 for uniquely identifying the merchant, (ii) a name 622 of the merchant, (iii) an address 624 of the merchant, (iv) a standard industry classification ("SIC") code 626 of the merchant which defines a merchant class of the merchant.

Referring to FIG. 7, a table 700 illustrates a record of the customer database 424 (FIG. 4). In such an embodiment, the customer database 424 typically includes a plurality of records, each of which includes information about a customer. Such information is typically collected during transactions with the customer. The table 700 includes a set of license plate characters 702. In one embodiment, the license plate characters include (i) alphanumeric characters corresponding to those on the license plate of the customer's vehicle, and (ii) a two-letter code indicating the state of registration of the license plate. Although one set of license plate characters is shown in FIG. 7, a record of the customer database 424 may include a plurality of sets of license plate characters. Such an embodiment is advantageous in that a customer that drives more than one vehicle may be identified by the license plate of each of his vehicles.

The table 700 also includes a name 704 and address 706 of the customer, if available. The table 700 also includes a credit card number 708 that indicates a credit card account that has been used by the customer in a previous transaction, and a default order 710 for the customer, which is described in detail below.

The table 700 also includes entries 712 and 714, each of which describes a transaction in which the customer participated. It will be understood by those skilled in the art that the table 700 may include any number of entries. The table

8

700 also defines fields for each of the entries 712 and 714, which specify (i) a transaction identifier 720 that uniquely identifies the transaction, (ii) a merchant identifier 722 that identifies a merchant with which the customer participated in the transaction, (iii) a date and time 724 of the transaction, and (iv) a purchase price 726 of the transaction. The transaction data (e.g. items ordered, date and time of order, purchase price of order) that represents transactions may also be stored in a transaction database.

Referring to FIG. 8, a table 800 illustrates an embodiment of the inventory database 422 (FIG. 4). The table 800 includes entries 802, 804, 806 and 808, each of which describes an item of inventory that is sold by a merchant. It will be understood by those skilled in the art that the table 800 may include any number of entries. The table 800 also defines fields for each of the entries 802, 804, 806 and 808, which specify (i) an inventory identifier 820 for uniquely identifying the item of inventory, (ii) a description 822 of the item of inventory, and (iii) a price 824 for which the item of inventory is sold.

Referring to FIG. 9, a table 900 illustrates an embodiment of the remote order database 324 (FIG. 3). The table 900 includes entries 902, 904 and 906, each of which describes an order that was placed by a customer that was located remotely from the merchant. It will be understood by those skilled in the art that the table 900 may include any number of entries. The table 900 also defines fields for each of the entries 902, 904 and 906, which specify (i) a remote order identifier 920 for uniquely identifying the remote order, (ii) a date and time 922 when the items were remotely ordered, (iii) the license plate characters 924 that will identify the customer's vehicle when the customer claims his order, (iv) the items ordered 926, and (v) the merchant identifier 928 of the merchant, if any with which the order was placed.

Referring to FIG. 10, a table 1000 illustrates an embodiment of the order database 326 (FIG. 3). The table 1000 includes entries 1002, 1004 and 1006, each of which describes a placed order that was consummated by having the customer purchase and receive the ordered items. It will be understood by those skilled in the art that the table 1000 may include any number of entries. The table 1000 also defines fields for each of the entries 1002, 1004 and 1006, which specify (i) an order identifier 1020 for uniquely identifying the order, (ii) the merchant identifier 1022 of the merchant with which the order was consummated, (iii) a date and time 1024 when the items were received by the customer, (iv) a purchase price 1026 paid for the order, (v) the license plate characters 1028 that identify the customer's vehicle, (vi) the items purchased 1030, (vii) offers 1032, if any, that were provided to the customer, and (viii) an indication of whether the offer was accepted 1034.

Referring to FIG. 11, a table 1100 illustrates a record of an embodiment of the complimentary item database 328 (FIG. 3). The complimentary item database 328 typically includes a plurality of such records, each describing one or more items that a customer is entitled to free of charge. The table 1100 includes a customer identifier 1102 that identifies the customer. The table 1100 also includes an entry 1104 that describes an item that the customer is entitled to free of charge. It will be understood by those skilled in the art that the table 1100 may include any number of entries. The table 1100 also defines fields for each entry, which specify (i) a complimentary item identifier 1120 that uniquely identifies the customer's complimentary item, (ii) a number 1122 of the complimentary items remaining to be received by the customer, (iii) a date 1124 that the complimentary item was last received by the customer, and (iv) a time period 1126

within which no more than one complimentary item may be received by the customer.

Referring to FIG. 12, a table 1200 illustrates a record of an embodiment of the custom price database 330 (FIG. 3). The custom price database 330 typically includes a plurality of such records, each describing one or more items that a customer may purchase for a price different than the retail price. Typically, each custom price is generated for an item based on the customer information such as past transactions of the customer. For example, a customer may be afforded a custom price for an item he purchases a predetermined number of times.

The table 1200 includes a customer identifier 1202 that identifies the customer. The table 1200 also includes entries 1204 and 1206 that each describe an item that the customer may purchase for a "custom price". It will be understood by those skilled in the art that the table 1200 may include any number of entries. The table 1200 also defines fields for each of the entries 1204 and 1206, which specify (i) an inventory identifier 1220 that uniquely identifies the item, (ii) a description 1222 of the item, (iii) a custom price 1224 of the item, and (iv) any restrictions 1226 that must be satisfied in order for the customer to be able to pay the custom price.

Referring to FIG. 13, a table 1300 illustrates a record of an embodiment of the default order database 332 (FIG. 3). The default order database 332 typically includes a plurality of such records, each describing default orders that are offered to a customer upon recognizing the customer. The table 1300 includes a customer identifier 1302 that identifies the customer.

The table 1300 also includes entries 1304, 1306 and 1308 that each describe a default order and conditions under which the default order is offered to the customer. It will be understood by those skilled in the art that the table 1300 may include any number of entries. The table 1300 also defines fields for each of the entries 1304, 1306 and 1308, which specify (i) the items, also known as default items, included in the default order 1320; and (ii) an indication of when the default order is "active" 1322 (to be offered). The default order database 332 may further store default items that are customized versions of conventional items (e.g. a cheeseburger with extra cheese and no ketchup). Such default items could also be displayed by the menu board display 135 (FIG. 1) to the customer.

In general, information stored about a customer is considered to be stored in a "customer record". Accordingly, each of a plurality of customer records corresponds to a customer. Information that is stored in the customer database 424 may be considered part of a respective customer record. In addition, the data stored in the complimentary item database 328, the custom price database 330 and/or the default order database 332 may also be considered part of a respective customer record. Similarly, the data stored in the complimentary item database 328, the custom price database 330, and the default order database 332 may instead be stored in the customer database 424. Further data may be stored for each customer. For example, each time the an image of a license plate is generated, the image may be stored in the customer record for future comparison and/or analysis.

Referring to FIG. 14, a flow chart 1400 illustrates an embodiment of a method provided in accordance with the present invention. A signal is received from the vehicle sensors 140 and 145 (FIG. 1), in which the signal generally indicates the presence of a vehicle in the drive-through (step 1402). The 140 and 145 vehicle sensors transmit the signal

to the merchant controller 115 (FIG. 1). In response, merchant controller 115 directs the imaging sampler 160 to focus on and generate an image of the license plate of the vehicle (step 1404). The imaging sampler 160 in turn transmits a signal representing the image to the merchant controller 115.

The merchant controller 115 determines from the image a set of license plate characters of the license plate (step 1406). The merchant controller 115 may perform optical character recognition (OCR) on the image of in order to determine the set of license plate characters. OCR is a process in which an image of characters is analyzed to determine the shapes of the characters by detecting patterns of dark and light. Once the shapes are determined, character recognition methods (pattern matching with stored sets of characters) are used to translate the shapes into computer text. Sometimes OCR is done with special readers, but often it is done using a standard imaging sample and specialized software. The merchant controller 115 may also determine the state of registration of the license plate, for example, with reference to the colors of the license plate.

The customer database 424 (FIG. 4) is searched to determine if there is a customer record that corresponds to the set of license plate characters (step 1408). Typically, if the vehicle has never had its license plate scanned as described above, there will be no corresponding customer record. If no customer record exists, then a customer record is created (step 1410). The created customer record will correspond to the set of license plate characters.

For example, referring again to the table 700 (FIG. 7), a new record of the customer database 424 may be created and the set of license plate characters may be stored in the field 702 of the record. Transaction data is received (step 1412) and stored in the corresponding customer record (step 1414).

Referring to FIG. 15A, a flow chart 1500 illustrates an embodiment of a method provided in accordance with the present invention. In particular, the illustrated method is performed when a customer located remotely from the store place s an order. The merchant controller 115 (FIG. 1) receives a remote order (step 1502) from the user communication device 110 (FIG. 1). For example, a customer may submit a remote order using a computer to access a web site, or using a telephone to access an interactive voice response unit ("VRU"). The merchant controller 115 also receives from the customer the set of license plate characters (step 1504) to identify the customer when the order is collected. The customer may further specify, for example, an intended time of collection of the order and/or a merchant from which to collect the order if more than one merchant may satisfy the order. In response to the information received from the customer, a record is created in the remote order database 324 (FIG. 3). The record would be identified by the set of license plate characters and would indicate the remote order.

Referring to FIG. 15B, a flow chart 1550 illustrates an embodiment of a method provided in accordance with the present invention. In particular, the illustrated method is performed when a customer collects a remotely-placed order. The merchant controller 115 determines a set of license plate characters of a customer's vehicle (step 1552) as described above. The remote order database is then searched for a record corresponding to this set of license plate characters (step 1554). If it is determined that there is no such corresponding record (step 1556), then the transaction is processed conventionally (step 1558).

Otherwise, the remotely ordered items are determined from the corresponding record of the remote order database

11

(step 1560). The remotely ordered items are then registered as ordered items (step 1562) as if the customer had placed the order at the drive-through. The credit card account (or other financial account) of the customer, if any, is also determined from the remote order record (step 1564). Alternatively, the account of the customer may be determined by referring to a record of the customer database, if the customer had previously used his credit card account to pay for a transaction. The account is charged (step 1566) (or payment is otherwise rendered) in an amount equal to the purchase price of the order, and the merchant controller outputs a command to assemble the remotely ordered items (step 1568), if necessary, to the kitchen staff in a manner known in the art.

Referring to FIG. 16A, a flow chart 1600 illustrates an embodiment of a method provided in accordance with the present invention. In particular, the illustrated method is performed when a customer desires to make his current order the "default order", thereby allowing the merchant to sell him his desired items without specifying those items again. The merchant controller 115 (FIG. 1) determines a set of license plate characters of the customer's vehicle (step 1602) and receives an indication of the items the customer is ordering (step 1604) as described above. The customer is asked if his current order should be his default order (step 1606). The customer responds, and the response is received (step 1608) by, for example, actuating a key on a POS terminal. If the customer response is affirmative (step 1610), then the ordered items are stored as the default order of the customer (step 1612). For example, the corresponding customer record may indicate the default order in the field 710 (FIG. 7). Alternatively, an appropriate record of the default order database 332 (FIG. 3) may be created or adjusted to reflect the default order, as well as any restriction on when the default order would be active. The remainder of the transaction is then processed as described above (step 1614). In an alternate embodiment, each item of the order may be designated as a "default item", rather than the entire order being designated as a "default order".

Referring to FIG. 16B, a flow chart 1650 illustrates an embodiment of a method provided in accordance with the present invention. In particular, the illustrated method is performed when a default order is registered as the customer's order. The merchant controller 115 (FIG. 1) determines a set of license plate characters of a customer's vehicle (step 1652) as described above. If the corresponding customer record does not indicate that the customer has a default order (step 1654), then the transaction is processed conventionally (step 1656).

Otherwise, the default order of the customer is determined (step 1658) and the customer is asked whether he would like the default order (step 1660). The default order may be read by the cashier to the customer, and/or the default order may be displayed on the menu board display 135 (FIG. 1). The customer's response is received (step 1662) and if it is determined that the response is affirmative (step 1664) then the items of the default order are registered as ordered items (step 1666).

Referring to FIG. 17, a flow chart 1700 illustrates an embodiment of a method provided in accordance with the present invention. In particular, the illustrated method is performed when a customer is able to purchase an item for a custom price, which is typically less than the retail price of the item. The merchant controller 115 (FIG. 1) determines a set of license plate characters of a customer's vehicle (step 1702) as described above. If the corresponding customer record does not indicate that the customer has one or more

12

custom prices (step 1704), then the transaction is processed conventionally (step 1706). Otherwise, the corresponding items and custom prices are displayed on the menu board display (step 1708). If the customer chooses to order any of the items having custom prices, then the custom prices are charged rather than the retail prices.

Referring to FIG. 18, a flow chart 1800 illustrates an embodiment of a method provided in accordance with the present invention. In particular, the illustrated method is performed when a customer has an associated custom menu arrangement. For example, based on past transactions of the customer, the most frequently purchased items may be displayed more prominently (e.g. at the top of the menu board display 135 or centrally located on the menu board display 135).

The merchant controller 115 (FIG. 1) determines a set of license plate characters of a customer's vehicle (step 1802) as described above. If the corresponding customer record does not indicate that the customer has a custom menu arrangement (step 1804), then the transaction is processed conventionally (step 1806). Otherwise, the menu board display displays the items and prices according to the custom arrangement (step 1808).

Referring to FIG. 19, a flow chart 1900 illustrates an embodiment of a method provided in accordance with the present invention. In particular, the illustrated method is performed to provide an offer to a customer based on his past transactions. For example, based on past transactions of the customer, the most frequently purchased items may be offered if it has not been ordered presently, or an item that has never been purchased may be offered.

The merchant controller 115 (FIG. 1) determines a set of license plate characters of a customer's vehicle (step 1902) as described above. The past transactions of the customer are determined (step 1904), typically by referring to the customer database 424 (FIG. 4). Transaction data is then received (step 1906) as described above. An offer that is based on previously ordered items is then generated (step 1908). For example, if a previously-ordered item does not match any of the ordered items, that previously-ordered item may be offered to the customer. Similarly, the offer may be for an item that has never been ordered. An indication of the offer is output (step 1910), for example by displaying text on a POS terminal which may be read by the cashier. If the offer is accepted (step 1912), then the offered item is added to the order (step 1914). Then, the transaction is processed conventionally (step 1916).

Referring to FIG. 20, a flow chart 2000 illustrates an embodiment of a method provided in accordance with the present invention. In particular, the illustrated method is performed to determine if a customer is a frequent patron of the merchant or if the customer has rarely or never frequented the merchant. The merchant controller 115 (FIG. 1) determines a set of license plate characters of a customer's vehicle (step 2002) as described above. The merchant controller 115 then determines the number of past transactions (step 2004) that the customer has had with this merchant (step 2004), typically by referring to the customer database 424 (FIG. 4).

If the number of transactions is below a first predetermined threshold (step 2006), then the customer is an infrequent customer, and it would be advantageous to prompt future patronage. Accordingly, the customer may be provided with a bonus (step 2008) such as a coupon redeemable at the merchant. In an alternate embodiment, the customer may be provided with an offer, such as an offer for a

13

supplementary product in exchange for an amount of change due him. If the number of transactions is above a second predetermined threshold (step 210), then the customer is a frequent customer, and it would be advantageous to reward the customer for his patronage. Accordingly, the customer may be provided with a bonus (step 2012) such as a discount.

In a related embodiment, the number of transactions of the customer and the number of merchants visited by the customer may be determined from the customer record. It can be especially advantageous to determine if and how often the customer has participated in transactions with any of a set of merchants, such as different franchisees of a particular retailer. If the customer has participated in transactions with more than one merchant of the set more than a predetermined number of times, a bonus could be provided to prompt future patronage at one of the merchants. For example, if a customer has participated in transactions with more than one merchant of the group of related franchisees more than three times per month, a bonus could be provided to prompt future patronage at one particular franchisee. Other variations will be apparent to those skilled in the art.

The above-described embodiment is especially advantageous when a set of stores are commonly owned and the owner would like customers to be directed to one of the stores (e.g. the one with the lowest sales). Often, an owner of several stores all within a short distance of the others will find one store to suffer much lower sales than the rest. The owner could assure that customers would be provided with a bonus to prompt future patronage at one, but not the remaining, commonly-owned stores.

Referring to FIG. 21, a flow chart 2100 illustrates an embodiment of a method provided in accordance with the present invention. In particular, the illustrated method is performed to allow a customer to periodically collect items that are complimentary or prepaid.

The merchant controller 115 (FIG. 1) determines a set of license plate characters of a customer's vehicle (step 2102) as described above. The merchant controller 115 then determines if the customer is eligible for any complimentary items (step 2104), typically by referring to the appropriate record of the complimentary item database 328 (FIG. 3). For example, the number remaining must be greater than zero and no complimentary item may have been received within the specified time period. If the customer is not eligible, the transaction is processed conventionally (step 2106).

Otherwise, the complimentary item is added free of charge to the order (step 2108), thereby registering the complimentary item as an ordered item. The appropriate record of the complimentary item database 328 is updated (step 2110) to reflect the new number remaining (field 1122) and the new date the complimentary item was last received (step 1124). If desirable, a third party is charged for the complimentary item (step 2112). For example, a set of complimentary items may be purchased for the customer on behalf of a third party who is charged initially or when the complimentary items are received. In another embodiment, the set of complimentary items may have been purchased in advance by the customer. Accordingly, no third party would need to be charged.

Customers may change license plates. For example, a customer may buy another vehicle that has a new set of license plate characters on its license plate. Rather than having a new customer record created for the new set of license plate characters, the customer may associate the new set of license plate characters with the customer record that

14

corresponds to the old set of license plate characters. For example, the new set of license plate characters may be stored in the field 702 (FIG. 7) of the corresponding customer record. The new license plate characters may be entered in a number of ways, such as by the customer via a kiosk or a web site, or by a cashier operating a POS terminal.

The present invention may be used to collect information about customers and their patronage. Such information may in turn be advantageously employed by various merchants to determine "repeat customers". The above-described databases may be searched to determine, for example, how many customers visit the store more than once per month and how many of the customers that visited the store in the current month had also been to the store last month. In such an embodiment, the imaging scanner and vehicle sensors may be located in an alley through which vehicles must pass to enter a parking lot. Thus, even customers that do not place orders in a drive-through may have their license plates read and processed as described above.

Although the present invention has been described with respect to a preferred embodiment thereof, those skilled in the art will note that various substitutions may be made to those embodiments described herein without departing from the spirit and scope of the present invention.

What is claimed is:

1. A method for maintaining a database using license plate scanning, comprising:

generating an image of a license plate of a customer in a drive through;

determining a set of license plate characters from the image; and

determining a record that corresponds to the set of license plate characters,

in which the record stores data representing an order.

2. The method of claim 1, further comprising:

creating, if there is not a customer record that corresponds to the license plate characters, a customer record that corresponds to the set of license plate characters.

3. The method of claim 2 in which the created customer record further includes transaction data that represents a transaction.

4. The method of claim 1, further comprising:

determining if the set of license plate characters matches any of a plurality of sets of license plate characters.

5. The method of claim 1 in which the step of determining a set of license plate characters from the image comprises:

performing an optical character recognition process on the image.

6. The method of claim 1, further comprising:

receiving a signal that indicates a presence of a vehicle.

7. The method of claim 6 in which the step of generating an image of a license plate is performed in response to receiving the signal that indicates a presence of a vehicle.

8. The method of claim 1, further comprising:

receiving transaction data that represents a transaction.

9. The method of claim 1, further comprising:

storing the transaction data in the customer record.

10. The method of claim 9 in which the transaction data represents at least one of:

an item ordered,

a time of the transaction,

a merchant identifier that identifies a merchant,

whether an offer was accepted, and

an account identifier that identifies a financial account.

15

11. The method of claim 1, further comprising:
storing in the customer record an item represented by the
transaction data as a default item.

12. The method of claim 11, further comprising:
receiving, during a subsequent transaction, a command to
register the default item as an ordered item.

13. The method of claim 11, further comprising:
registering the default item as an ordered item during a
subsequent transaction.

14. The method of claim 11, further comprising:
receiving a signal verifying selection of the default item
as an ordered item.

15. The method of claim 1, further comprising:
generating at least one item price for an item based on the
customer record.

16. The method of claim 15, further comprising:
displaying the at least one item price.

17. The method of claim 1, further comprising:
selecting at least one item from a plurality of items based
on the customer record.

18. The method of claim 17, further comprising:
displaying the at least one item.

19. The method of claim 1, further comprising:
searching a database of remotely ordered items for a
remote order record that corresponds to the set of
license plate characters.

20. The method of claim 19, further comprising:
determining an remotely ordered item from the remote
order record.

21. The method of claim 20, further comprising:
registering the remotely ordered item as an ordered item.

22. The method of claim 20, further comprising:
determining an account from the remote order record; and
charging the account based on a price of the remotely
ordered item.

23. The method of claim 20, further comprising:
outputting a command to assemble the remotely ordered
item.

24. The method of claim 19, further comprising:
receiving an indication of a remotely ordered item.

25. The method of claim 24, further comprising:
storing the indication of a remotely ordered item in a
remote order record of a database of remotely ordered
items.

26. The method of claim 1, further comprising:
determining a previously ordered item from the customer
record.

27. The method of claim 26, further comprising:
generating an offer based on the previously ordered item.

28. The method of claim 27 in which the step of gener-
ating an offer is performed if the previously ordered item
does not match an ordered item.

29. The method of claim 27 in which the offer comprises
an offer for the previously ordered item.

30. The method of claim 27, further comprising:
outputting an indication of the offer.

31. The method of claim 1, further comprising:
determining from the customer record a number of trans-
actions with a merchant.

32. The method of claim 31, further comprising:
providing a bonus if the number of transactions is below
a predetermined threshold.

33. The method of claim 32 in which the bonus comprises
a coupon redeemable at the merchant.

16

34. The method of claim 31, further comprising:
providing an offer if the number of transactions is below
a predetermined threshold.

35. The method of claim 34 in which the offer comprises
an offer for a product in exchange for an amount of change
due.

36. The method of claim 1, further comprising:
determining from the customer record if a number of
transactions with a merchant is below a predetermined
threshold.

37. The method of claim 1, further comprising:
determining from the customer record a number of mer-
chants visited.

38. The method of claim 1, further comprising:
determining from the customer record a complimentary
item.

39. The method of claim 38, further comprising:
determining from the customer record a number of
remaining complimentary items.

40. The method of claim 39, further comprising:
registering the complimentary item as an ordered item if
the number of remaining complimentary items is
greater than a predetermined threshold.

41. The method of claim 40 in which the predetermined
threshold is zero.

42. The method of claim 38, further comprising:
determining from the customer record a time period for
receiving the complimentary item.

43. The method of claim 42, further comprising:
determining from the customer record whether a compli-
mentary item was received within the time period.

44. The method of claim 43, further comprising:
registering the complimentary item as an ordered item if
the complimentary item was not received within the
time period.

45. The method of claim 38, further comprising:
registering the complimentary item as an ordered item.

46. The method of claim 45, further comprising:
charging a third party for the complimentary item.

47. An apparatus for identifying a customer in a vehicle,
comprising:
means for storing a plurality of records, each record
corresponding to a set of license plate characters;
means for determining a set of license plate characters of
a license plate of a customer in a drive through;
means for identifying a record that corresponds to the
determined set of license plate characters; and
means for creating a record that corresponds to the
determined set of license plate characters if no stored
record corresponds to the determined set of license
plate characters,
in which the record stores data representing an order.

48. The apparatus of claim 47, further comprising:
means for receiving transaction data.

49. The apparatus of claim 48, further comprising:
means for storing the transaction data in the customer
record that corresponds to the determined set of license
plate characters.

50. The apparatus of claim 47 in which the means for
determining a set of license plate characters of a license plate
comprises a camera.

51. The apparatus of claim 50 in which the means for
determining a set of license plate characters of a license plate
comprises a camera that outputs a digital image.

17

52. The apparatus of claim 50, further comprising:
means for focusing the camera on the license plate.

53. The apparatus of claim 47, further comprising:
a display device for displaying an item and a price of the
item.

54. The apparatus of claim 47, further comprising:
means for sensing a presence of a vehicle.

55. The apparatus of claim 54 in which the means for
sensing a presence of a vehicle comprises at least one of a
pressure sensor and a photo sensor.

56. The apparatus of claim 47, further comprising:
a speaker operable to transmit audio signals to a drive-
through customer.

57. The apparatus of claim 47, further comprising:
a microphone operable to receive audio signals from a
drive-through customer.

58. An computer readable medium storing at least one
record created in accordance with the method of claim 1.

59. An computer readable medium storing at least one
record created in accordance with the method of claim 10.

60. An apparatus for identifying a customer in a vehicle
at a drive-through, comprising:
means for receiving transaction data about a drive-
through customer;
a display device for displaying an item and a price of the
item to the drive-through customer;
a speaker operable to transmit audio signals to the drive-
through customer;
a microphone operable to receive audio signals from the
drive-through customer;
means for sensing a presence of a vehicle of the drive-
through customer;
a camera operable to generate an image of a license plate
of the vehicle;
means for determining a set of license plate characters of
the license plate;
means for storing a plurality of customer records, each
customer record corresponding to a set of license plate
characters;
means for identifying a customer record that corresponds
to the determined set of license plate characters;
means for creating a customer record that corresponds to
the determined set of license plate characters if no
stored customer record corresponds to the determined
set of license plate characters; and
means for storing the transaction data in the customer
record that corresponds to the determined set of license
plate characters.

61. A method for maintaining a database using license
plate scanning, comprising:
generating an image of a license plate of a customer in a
drive through;
determining license plate characters from the image;
determining if there is a record that corresponds to the
license plate characters;
receiving transaction data that represents a transaction;
and
creating, if there is not a record that corresponds to the
license plate characters, a record that corresponds to the
license plate characters, the record storing the transac-
tion data,
in which the record stores data representing an order.

62. A method for maintaining a database using license
plate scanning, comprising:

18

generating an image of a license plate of a customer in a
drive through;
determining license plate characters from the image;
determining if there is a record that corresponds to the
license plate characters; and
creating, if there is not a record that corresponds to the
license plate characters, a record that corresponds to the
license plate characters, the record storing transaction
data that represents a transaction,
in which the record stores data representing an order.

63. A method for maintaining a database using license
plate scanning, comprising:
generating an image of a license plate of a customer in a
drive through;
determining license plate characters from the image;
determining a record that corresponds to the license plate
characters;
determining a default item from the record;
registering a default item as an ordered item; and
outputting an indication of the default item,
in which the record stores data representing an order.

64. The method of claim 63, further comprising: receiving
a signal verifying selection of the default item as an ordered
item.

65. An apparatus for maintaining a database using license
plate scanning, comprising:
means for generating an image of a license plate of a
customer in a drive through;
means for determining a set of license plate characters
from the image; and
means for determining a record that corresponds to the set
of license plate characters,
in which the record stores data representing an order.

66. An apparatus for maintaining a database using license
plate scanning, comprising:
a storage device; and
a processor connected to the storage device,
the storage device storing a program for controlling the
processor; and
the processor operative with the program to:
generate an image of a license plate of a customer in a
drive through;
determine a set of license plate characters from the
image; and
determine a record that corresponds to the set of license
plate characters,
in which the record stores data representing an order.

67. A computer readable medium encoded with process-
ing instructions for implementing a method performed by a
computer for maintaining a database using license plate
scanning, the method comprising:
generating an image of a license plate of a customer in a
drive through;
determining a set of license plate characters from the
image; and
determining a record that corresponds to the set of license
plate characters,
in which the record stores data representing an order.

68. An apparatus for maintaining a database using license
plate scanning, comprising:
means for generating an image of a license plate of a
customer in a drive through;
means for determining license plate characters from the
image;

19

means for determining if there is a record that corresponds to the license plate characters;

means for receiving transaction data that represents a transaction; and

means for creating, if there is not a record that corresponds to the license plate characters, a record that corresponds to the license plate characters, the record storing the transaction data,

in which the record stores data representing an order.

69. An apparatus for maintaining a database using license plate scanning, comprising:

a storage device; and

a processor connected to the storage device,

the storage device storing a program for controlling the processor; and

the processor operative with the program to:

generate an image of a license plate of a customer in a drive through;

determine license plate characters from the image;

determine if there is a record that corresponds to the license plate characters;

receive transaction data that represents a transaction; and

create, if there is not a record that corresponds to the license plate characters, a record that corresponds to the license plate characters, the record storing the transaction data,

in which the record stores data representing an order.

70. A computer readable medium encoded with processing instructions for implementing a method performed by a computer for maintaining a database using license plate scanning, the method comprising:

generating an image of a license plate of a customer in a drive through;

determining license plate characters from the image;

determining if there is a record that corresponds to the license plate characters;

receiving transaction data that represents a transaction; and

creating, if there is not a record that corresponds to the license plate characters, a record that corresponds to the license plate characters, the record storing the transaction data,

in which the record stores data representing an order.

71. An apparatus for maintaining a database using license plate scanning, comprising:

means for generating an image of a license plate of a customer in a drive through;

means for determining license plate characters from the image;

means for determining if there is a record that corresponds to the license plate characters; and

means for creating, if there is not a record that corresponds to the license plate characters, a record that corresponds to the license plate characters, the record storing transaction data that represents a transaction,

in which the record stores data representing an order.

72. An apparatus for maintaining a database using license plate scanning, comprising:

a storage device; and

a processor connected to the storage device,

the processor operative with the program to:

generate an image of a license plate of a customer in a drive through;

determine license plate characters from the image;

20

determine if there is a record that corresponds to the license plate characters; and

create, if there is not a record that corresponds to the license plate characters, a record that corresponds to the license plate characters, the record storing transaction data that represents a transaction,

in which the record stores data representing an order.

73. A computer readable medium encoded with processing instructions for implementing a method performed by a computer for maintaining a database using license plate scanning, comprising:

generating an image of a license plate of a customer in a drive through;

determining license plate characters from the image;

determining if there is a record that corresponds to the license plate characters; and

creating, if there is not a record that corresponds to the license plate characters, a record that corresponds to the license plate characters, the record storing transaction data that represents a transaction,

in which the record stores data representing an order.

74. An apparatus for maintaining a database using license plate scanning, comprising:

means for generating an image of a license plate of a customer in a drive through;

means for determining license plate characters from the image;

means for determining a record that corresponds to the license plate characters;

means for determining a default item from the record;

means for registering a default item as an ordered item; and

means for outputting an indication of the default item,

in which the record stores data representing an order.

75. An apparatus for maintaining a database using license plate scanning, comprising:

a storage device; and

a processor connected to the storage device, the storage device storing a program for controlling the processor; and

the processor operative with the program to:

generate an image of a license plate of a customer in a drive through;

determine license plate characters from the image;

determine a record that corresponds to the license plate characters;

determine a default item from the record;

register a default item as an ordered item; and

output an indication of the default item,

in which the record stores data representing an order.

76. A computer readable medium encoded with processing instructions for implementing a method performed by a computer for maintaining a database using license plate scanning, the method comprising:

generating an image of a license plate of a customer in a drive through;

determining license plate characters from the image;

determining a record that corresponds to the license plate characters;

determining a default item from the record;

registering a default item as an ordered item; and

outputting an indication of the default item,

in which the record stores data representing an order.

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